

Amendments to the Specification:

Please add the following new paragraph after the paragraph ending at page 16, line 22:

For example, a computer program product residing on a computer readable medium for causing a parallel processor to perform a function includes instructions causing the processor to designate the memory resource for pushing the data to the processing agent using a push bus having a plurality of sources that arbitrate use of the push bus; and designate the memory resource for receiving the data from the processing agent using a pull bus having a plurality of destinations that arbitrate use of the pull bus. The computer program product can include instructions causing the processor to establish a plurality of contexts on the programming agent and maintaining program counters and context relative registers. The programming agent in a read phase can execute a context and issue a read command to a memory controller. The memory controller can process the read command to be sent to the memory resource and the context can be swapped out if the read command is required to continue the execution of the context.